

REMARKS

In the Office Action dated November 4, 2009, claims 1-11 and 15-20 were rejected under 35 U.S.C. 112, first paragraph. Claims 1-8, 10-11, 15-19, 21-24, 28, and 29 were rejected under 35 U.S.C. 103(a) over cited portions of U.S. Patent No. 5,814,565 "*Reichert*", cited portions of U.S. Patent No. 5,955,130 "*Iturralde*", cited portions of U.S. Patent No. 5,968,324 "*Cheung*" and cited portions of Process/Industrial Instruments and Controls Handbook 5th edition (1999) McGraw-Hill. Pp 2.4-2.22 "*McMillan*". Claims 4-5 and 23-24 were rejected under 35 U.S.C. 103(a) *Reichert, Iturralde, Cheung, McMillan* and cited portions of U.S. Patent No. 5,042,895 "*Chouinard*". Claim 9 was rejected under 35 U.S.C. 103(a) over *Reichert, Iturralde, Cheung, McMillan* and cited portions of *Applied Surface Science* 86 (1995) 582-590 "*Farrell*". Claims 20 and 23 were rejected under 35 U.S.C. 103(a) over *Reichert, Iturralde, Cheung, McMillan* and cited portions of U.S. Patent No. 5,904,491 "*Ojha*".

Claim 1 is amended to avoid the use of the term "non-zero". Claims 1 and 21 are further amended to recite that the method is configured to control both a vertical and a horizontal profile of the film. Support for the amendment can be found in cancelled claims 4-5 and 23-24 as well as elsewhere in the Specification, for example in paragraph [0021]. Following entry of this Amendment, claims 1-3, 6-11, 15-22, 28-29 and 33 are pending for examination.

A. The Rejection under 35 U.S.C. § 112 is Addressed

The rejection of claims 1-11 and 15-20 under 35 U.S.C. 112, first paragraph, is made moot by the Amendment. Claim 1 has been amended to remove the term "non-zero". Accordingly, withdrawal of the rejection is respectfully requested.

B. The Rejections under 35 U.S.C. § 103(a) are Addressed

These rejections are respectfully traversed in view of amended independent claims 1 and 21, which generally describe methods of forming optical waveguides over a substrate. Each of claims 1 and 21 recite the process conditions are changed to control a vertical profile and a horizontal profile of the film.

The subject matter of these claims are neither described nor suggested by *Reichert, Iturralde, Cheung, McMillan* or the other references used for dependent claim rejections, taken alone or in combination.

Reichert discusses forming a waveguide layer having a refractive index higher than the substrate by ensuring the nitrogen content is higher in the deposited waveguide layer than it is in the silicon oxynitride of the underlying substrate. *Iturralde* discusses using an optical technique (ellipsometry) to monitor the refractive index and adjust the flow rate ratio of reactive gases. *Cheung* indicates that the index of refraction of silicon oxynitride depends on plasma power level. *McMillan* discusses generic PID process control including discrete and continuous variation of an input. The combination of references may describe aspects of controlling a single profile of a depositing layer, however, there is no teaching of controlling both a horizontal profile and vertical profile as recited in claims 1 and 21. Such control is desirable, for example, to deposit material for or on the top and the sides of a waveguide during a single deposition process.

Reichert, Iturralde, Cheung, McMillan and the other references do not teach or suggest, either alone or in combination, changing process conditions in response to a measured optical property to control a vertical profile and a horizontal profile of the film. Therefore independent claims 1 and 21, as well as their dependent claims, are allowable over the references. Accordingly, withdrawal of the claim rejections under 103(a) is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

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Amendment

PATENT

Respectfully submitted,

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